

SCLEROCONA ACUTELLA (EVERSMANN) (CRAMBIDAE: PYRAUSTINAE),
NATURALIZED ALONG THE EASTERN SEABOARD

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ABSTRACT. *Sclerocona acutella* (Eversmann), a Eurasian species previously undocumented from North America, is reported from 14 localities in Connecticut, Massachusetts, Maryland, and Rhode Island. The first North American specimen was captured in 1984 at a coastal location in Bristol, Massachusetts. Capture and rearing records suggest the moth feeds on common reed, *Phragmites australis* (Cav.) Trin. ex Steud. (Poaceae), in freshwater and brackish wetlands. Given the increasing abundance of *Phragmites* along water courses and some upland habitats, *Sclerocona* stands to become one of the region's most common wetland moths.

Additional key words: alien species, *Phragmites*, biocontrol, wetlands.

Sclerocona acutella is a large, easily recognizable, wetland pyraustine. It is native to Europe and Asia, occurring from Spain and Sicily northward to Great Britain (as a stray) and Denmark (rare) east to Siberia, Japan, and China (Inoue et al. 1982, Palm 1986, Karsholt & Razowski 1996, Parenti 2000, Siberian Zoological Museum 2002). Ongoing surveys of Lepidoptera in southern New England and Maryland revealed the presence of *Sclerocona* in a variety of wetlands along the eastern sea board of the United States, including estuaries, marshes, fens, swamps, and lake and pond margins. We assume that the species was introduced accidentally, but because larvae feed on *Phragmites australis* (Cav.) Trin. ex Steud. (Poaceae), an aggressively invasive plant in many northeastern wetlands, there remains the possibility that it was purposefully introduced, although we were unable to locate any literature indicating such.

Voucher specimens are deposited in the following institutions and personal collections: John D. Glaser (JGC), Lloyd Center for Environmental Science (LCES), University of Connecticut (UConn), and University of Rhode Island Biological Control Lab (URI). Selected references and a diagnostic description follow.

Sclerocona acutella (Eversmann)

Crambus acutellus Eversmann, 1842:563.

Sclerocona acutella Meyrick, 1890:445. Meyrick proposed *Sclerocona* with *Crambus acutellus* Eversmann as the only included species.

Sclericonia acutellus, Marion, 1957:82.

Sclerocona acutellus, Palm, 1986:231.

Sclerocona acutella, Karsholt & Razowski (eds.), 1996:194.

Diagnostic description. Length of forewing (males): 11.5–12.5 mm. The light brown adults of this species superficially resemble their namesake, *Nascia acutella* (Walker) of eastern North America (see Munroe 1976: pl. 1, figs. 67–71), but *Sclerocona* adults have much longer porrect palpi, glossy white wing fringe scales, a pale costa, and lack the distinctive pale intervenular streaks of the forewing of *Nascia*. The unique forewing venation (Fig. 5) of *S. acutella* males is probably diagnostic within our fauna. The cubital stem bends deeply into the posterior side of the discal cell and back again, reducing the proximal half of the cell to only half the width of the distal half. This makes space, as it were, for a curiously enlarged and modified, comucopia-shaped retinaculum (Figs. 3, 4), which opens distally and provides a shelter on the wing surface just inside its opening for a small mat of darker, specialized scales of uncertain function (perhaps the structure and modified scales serve to disperse a sex pheromone).

The male genitalia (Fig. 6) are unlike those of the nearctic *Nascia acutella* but show surprising similarity to those of *Oenobotys* Munroe (Crambidae: Pyraustinae) (Munroe 1976: pl. A, figs. 6, 7; Ferguson et al. 1991: figs. 203a, c), having a similar fanlike cluster of processes on the inner face of the valve that resemble spatulate scales, each of which is expanded and bi- or trifurcate at its outer end. However, *Sclerocona acutella* also has a separate, prominent, spinose scle-

¹Deceased.



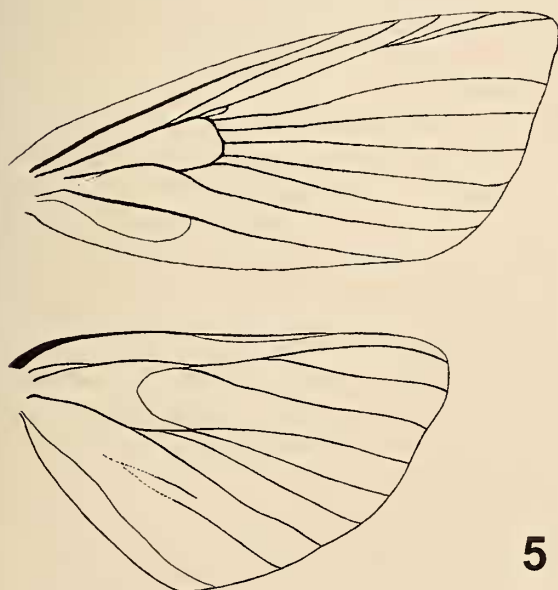
FIGS. 1-4. *Sclerocona acutella*. 1, Adult male, dorsal. 2, Adult male, ventral. 3, Retinaculum (arrow). 4, Cleared forewing.

rite (4-5 spines) embedded in the valve beneath (or behind) the fanlike structure as viewed on the slide. The uncus is elongate, smooth, and regularly tapered from base to tip. The aedeagus has almost no sclerotized inclusions (cornuti). The everted vesica shows only one blind sidepocket (diverticulum) at about its midpoint, and a small, low, weakly sclerotized hump farther out.

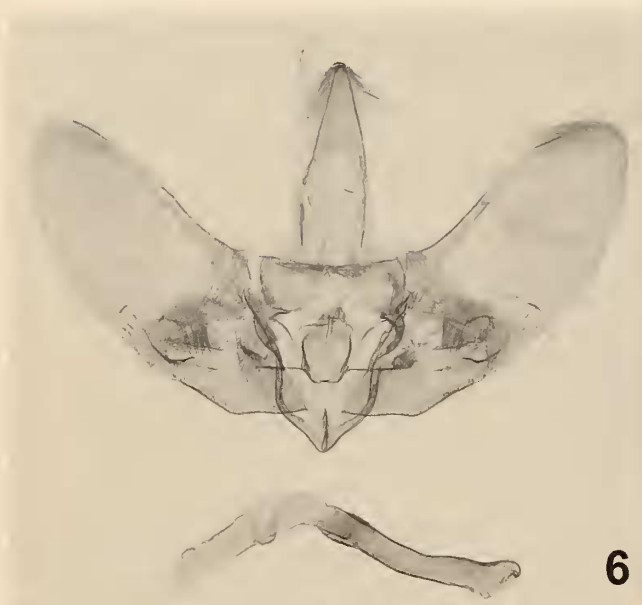
Distribution. **Connecticut:** Fairfield Co., Danbury, Tarrywile Park, 8.vi.2001, D. L. Wagner (1) (UCONN); Litchfield Co., Canaan, Robbins Swamp, The Nature Conservancy Hollenbeck Preserve, 1/2.vii.1997, M. Volovski (1) (UCONN); Salisbury, Moore Brook, 8/9.vii.1994, D. L. Wagner, V. Giles & M. C. Thomas, MV & blklt (1) (UCONN); same locality, 23-30.vi.1995, D. Wagner, J. Trouern-Trend, D. Primožich & M.C. Thomas, MV & blklt (7) (UCONN); Salisbury, Twin Lakes, 8/9.vii.1994, D. L. Wagner, V. Giles & M. C. Thomas, MV & blklt (1) (UCONN); same locality, 14.vii.1995, V. Giles

& A. Valley, MV & blklt (1) (UCONN). **Massachusetts:** Barnstable Co., Bourne, 23.vi-21.vii.1995, M. Mello, blklt trap (3) (LCES); Bristol Co., South Dartmouth, Lloyd Center, 2.vii.1984, M. Mello, blklt (1) (LCES); same locality, 26.vi.1989, M. Mello, blklt (1) (UCONN); Hampden Co., Brimfield, 14.vi.1996, M. Mello, blklt trap (1) (LCES); Hampshire Co., Amherst, 7 May, 1999 (larva), adult issued circa 15 June, 1999, Lisa Tewksbury and Geoffrey Balme (1) (URF); Suffolk Co., Boston, Thompson Island, 24.vi.2002, M. Mello, blklt trap (3) (LCES). **Maryland:** Dorchester Co., Taylor's Island Wildlife Management Area, 14.vi.1998, J.D. Glaser, blklt (4) (JGC, USNM); Harford Co., Bush Wildlife Management Area, 5.vi.1999, J.D. Glaser, blklt (9) (JGC, USNM); Worcester Co., Isle of Wight, 1.vi.2000, J.D. Glaser, blacklight traps (26) (JGC, USNM); Hickory Point Cypress Swamp, 29.v.2002, J. Glaser, blklt (1) (JGC). **Rhode Island:** Newport Co., Tiverton Pocasset Swamp, 25.vi.2001, M. Mello, blklt trap (1); Little Compton, 25.vi.2001, M. Mello, blklt trap (1) (LCES).

Early stages. Parenti (2000) and Robinson et al. (2002) list *Phragmites australis* as the host for *Sclero-*



5



6

FIGS. 5-6. *Sclerocona acutella*. 5, Wing venation. 6, Male genitalia.

cona acutella. Lisa Tewksbury and Geoffrey Balme (pers. com.) reared a single adult from a larva collected in the lower stem of *Phragmites*, on May 8–9, 1999, near Amherst, Massachusetts. The *Phragmites* stem was dead and broken; presumably it had been alive through the fall of the previous season. The single larva is believed to have pupated without further feeding.

Common reed, *Phragmites australis*, grows in both freshwater and brackish wetlands, which is consistent with the range of localities represented among our collections. Label data suggest the species is univoltine. Records from southern New England, where the species is best known, range from 14 June to 21 July ($n = 23$), with most collections falling within the last week of June and the first half of July. The Maryland specimens were collected between 1 and 14 June; the four from the latter date being slightly worn, indicating that *Sclerocona* flies earlier in Maryland.

Distribution in eastern North America. North American records are from both inland and coastal wetlands from Massachusetts, Connecticut, Maryland, and Rhode Island. The first North American specimen is believed to be a male taken by Mark Mello in South Dartmouth, Bristol County, Massachusetts, at the Lloyd Science Center in 1984. Although the moth certainly is distributed more widely, correspondence with other microlepidopterists suggests that it may not have spread much beyond the range we circumscribe here. We have written to (microlepidoptera) collectors in Maine (Tony Roberts), Michigan (George Balogh and Brian Scholtens), Ohio (Steve Passoa), Ontario (Jean-Francois Landry), and Quebec (Louis Hanfield)—none have yet taken this species.

Etymology. The generic name is a compound of the Greek adjective *sclero*, meaning tough, hard, and the Latin masculine noun, *conus* (or the Greek *konos*), obviously referring to the cone-shaped retinaculum. Meyrick (a classics scholar) intended *Sclerocona* to be feminine, spelling it with a feminine ending and changing the species name from *acutellus* to the feminine form, *acutella*. We mention this because some authors have continued to use *acutellus* in combination with the feminine generic name.

Remarks. Given the broad distribution of the moth along the eastern seaboard and the scant collections of pyraloids, the moth surely has been established for some time on the East Coast. Short of drawing inferences from detailed population genetic studies, there would seem to be no way to establish when, where, or how this species was introduced.

Mikkola and Lafontaine (1994) made the observation that several recently introduced moths in the Northeast, e.g., *Apamea unanimitis* (Hübner), *A. ophio-*

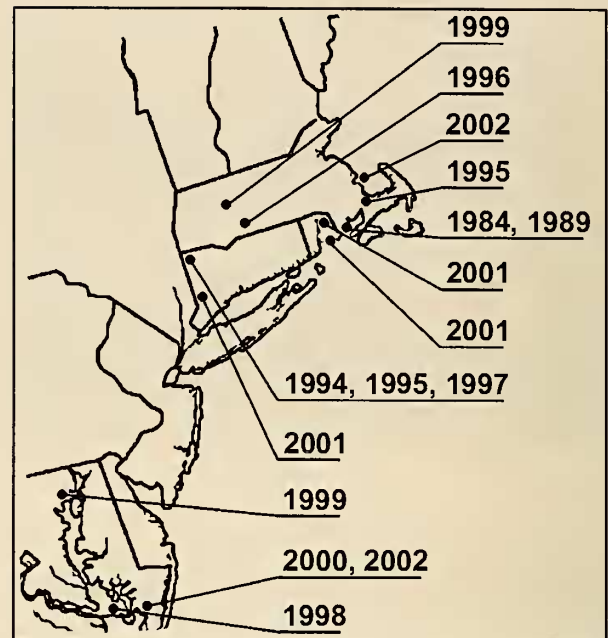


FIG. 7. Distribution of *Sclerocona acutella* along eastern seaboard. Locality data appears in text.

gamma (Esper), and *Rhizedra lutosa* (Hübner) are *Phragmites*, *Phalarus*, or other grass-feeders that are common in coastal habitats in Europe. The recently established *Oligia strigilis* (L.) reported by Handfield (1999) also fits this pattern (J. Don Lafontaine pers. com.). Mikkola and Lafontaine (1994) suggest that the turf and soil being picked up in shipyards, e.g., on the bottoms of large shipping containers, could be responsible for the recent spate of European coastal moth introductions along our eastern seaboard. *Sclerocona acutella*, being a *Phragmites* feeder, is yet another candidate for their list.

Phragmites australis is the focus of conservation efforts on both sides of the Atlantic Ocean, but for different reasons. In parts of Europe it is a local, protected species that has even been the focus of restoration efforts (e.g., Skuhavy 1978, Ostendorp 1989, Tschamtk 1990, 1992). On this continent, the plant is considered an invasive species that is overrunning wetlands, establishing almost pure monocultures of reed in coastal and inland wetlands that previously were floristically diverse (Garcia 1998, Chambers et al. 1999; Orson 1999, Saltonstall 2002). Given the new-found successes of *Phragmites*, we expect that adult *Sclerocona* will become one of the most abundant moths in the vicinity of wetlands in many northeastern states. If the moth proves to be a specialist of *Phragmites*, it might have a future as a biocontrol agent in programs seeking to curb the spread of this grass.

ACKNOWLEDGMENTS

Our friend and colleague, Doug Ferguson, passed away on 4 November 2002. He had assembled a partial draft of this paper in 2001. It is with deep sense of loss and admiration for Doug that we complete this small paper. René Tivarkins prepared the line drawing of the wing venation and helped assemble the figures. Mark Mello sent us data from his numerous collections of *Sclerocona*. Lisa Tewksbury and Geoffrey Balme supplied observations on their collection and rearing of *Sclerocona*. Several students, friends, and colleagues helped with the acquisition of the Connecticut specimens: Valerie Giles, Jon Trouern-Trend, Dave Primozich, Michael Thomas, and Monty Volovski. David Grimaldi and Tam Nguyen took the image of the male genital capsule using a Nikon D1X digital camera with an Infinity (c) K2 lens, illuminated with fiber optic flashes from MicOptics, Inc. We thank Peter Touhey and Alma Solis for recovering host rearing information from a Systematic Entomology Laboratory database and relaying it to us. Steven Passoa helped us track down European and Asian literature. Funding for surveys that resulted in captures of *Sclerocona* to DLAV was provided by the Connecticut Chapter of The Nature Conservancy, Connecticut Department of Environmental Protection, and Connecticut State Museum of Natural History.

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Received for publication 20 December 2002; revised and accepted 26 April 2003.